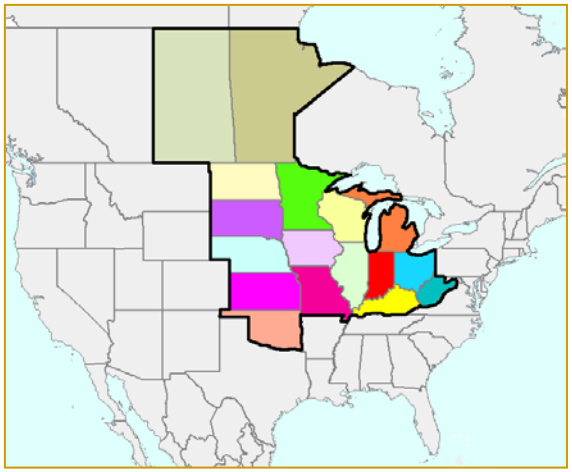
Midwestern Energy Infrastructure Assessment

Office of Market Oversight & Investigations
Federal Energy Regulatory Commission
Docket No. AD02-22-000
October 2002



Midwestern Region by State

Saskatchewan
Manitoba
North Dakota
Minnesota
South Dakota
Wisconsin
Michigan
Nebraska
Iowa
Illinois
Indiana
Ohio
Kansas
Missouri
West Virginia
Kentucky
Oklahoma

The Midwest is dependent on production from (1) gas originating from the West, Southeast, Northeast, OK and KS, and Canada, and (2) storage.

Midwest Gas Facts - 2000	United States	Midwest	% of United States
Total Gas Consumption	22.83 Tcf	5.8 Tcf	25%
Total Gas Production	18.99 Tcf (Dry Production)***	2.78 Tcf (Dry Production)***	15%*
Total Gas Reserves	177.4 Tcf	28.0 Tcf	16%**
Total Storage Capacity	8.2 Tcf	4.7 Tcf	56%
Net Imports from Canada	3.47 Tcf	1.27 Tcf	37%

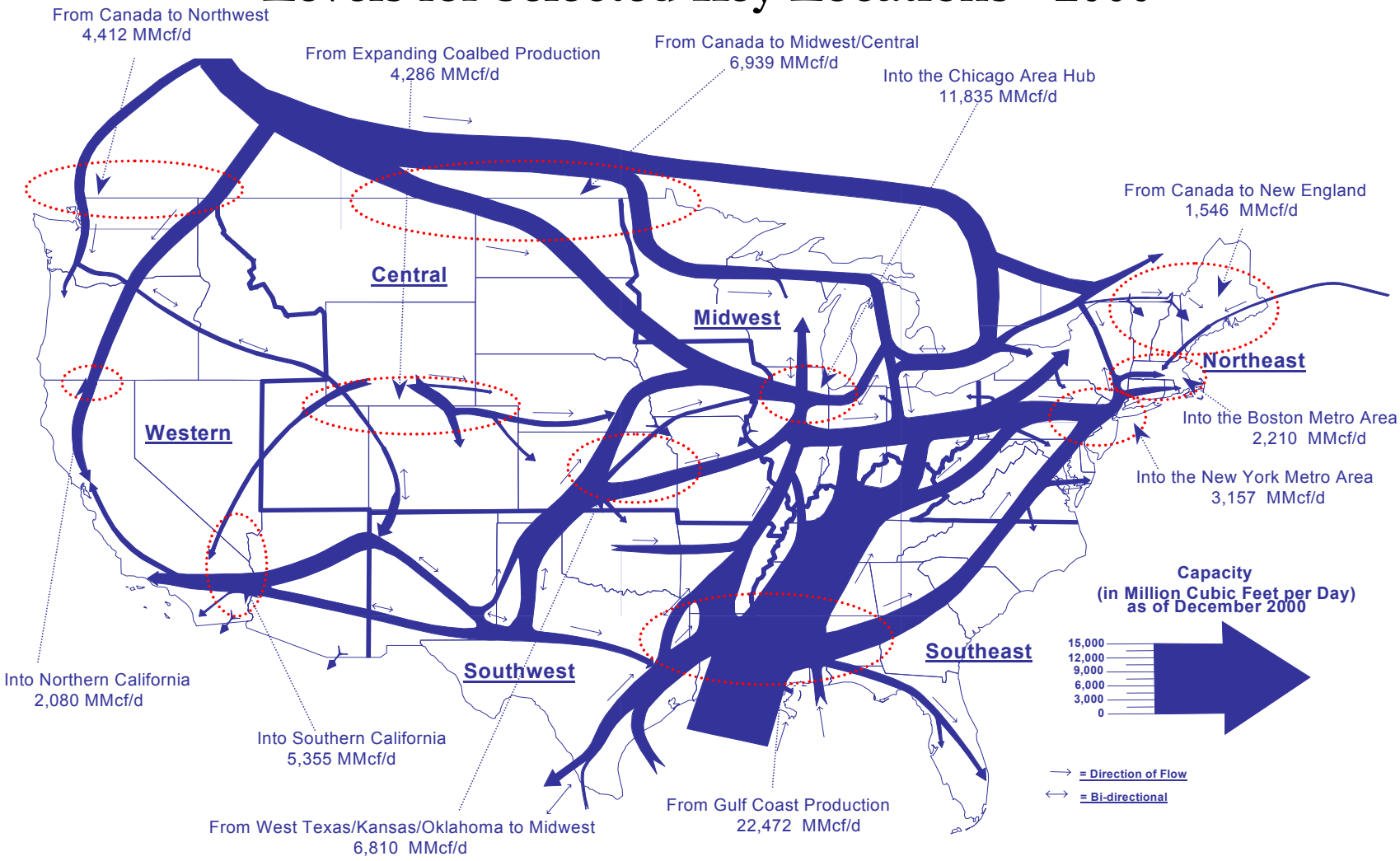
*72% of the 15% is produced in Oklahoma and Kansas.

**68% of the 16% is from Oklahoma and Kansas.

*** Equal to marketed production (wet) minus extraction loss.

Source: EIA

Major Natural Gas Pipeline Transportation Routes and Capacity Levels for Selected Key Locations - 2000

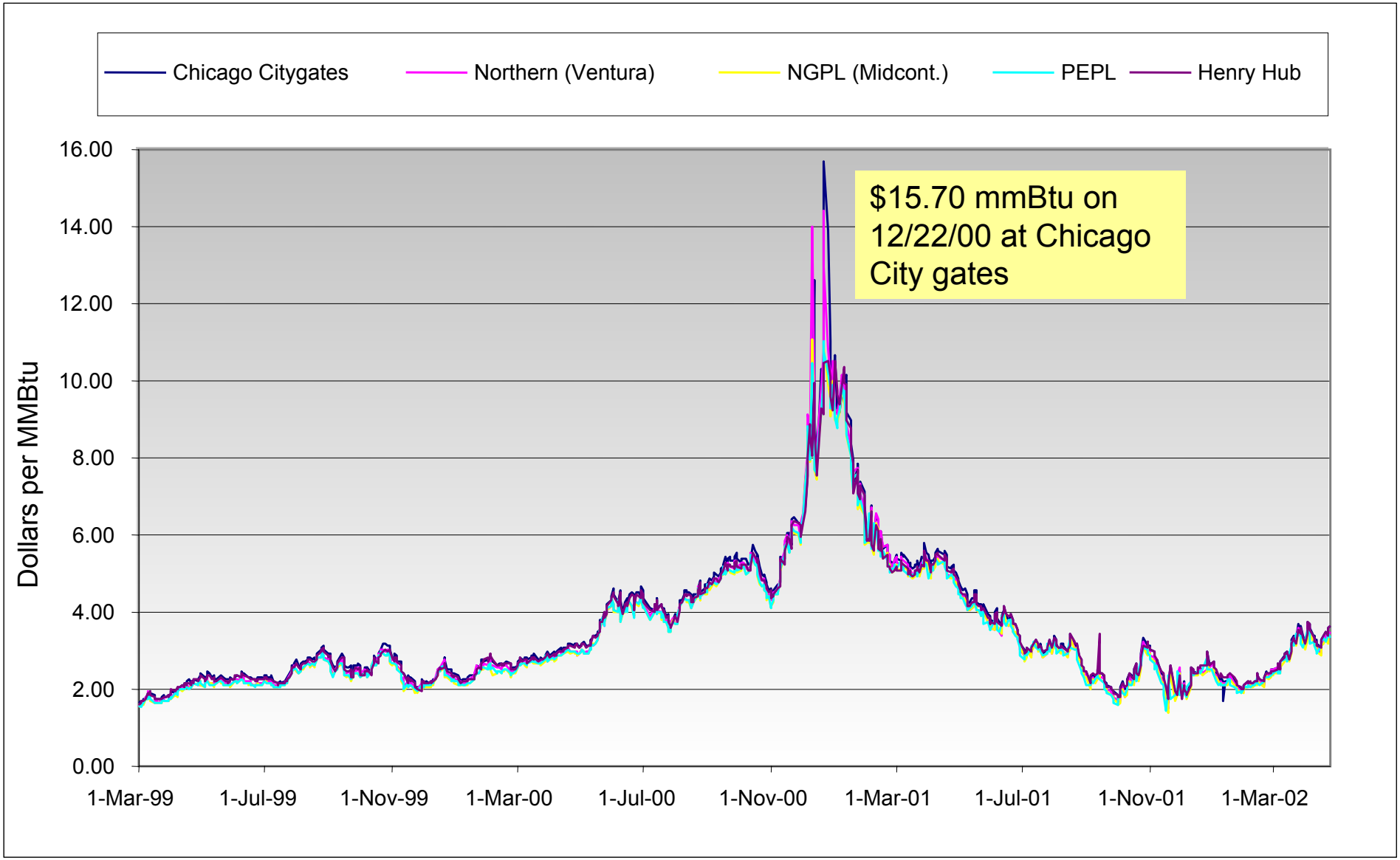


Source: Energy Information Administration, EIAGIS-NG Geographic Information System, Natural Gas Pipeline State Border Capacity Database, as of December 2000.

Pending projects will create new capacity to serve new electric generation loads and to deliver gas from producing areas.

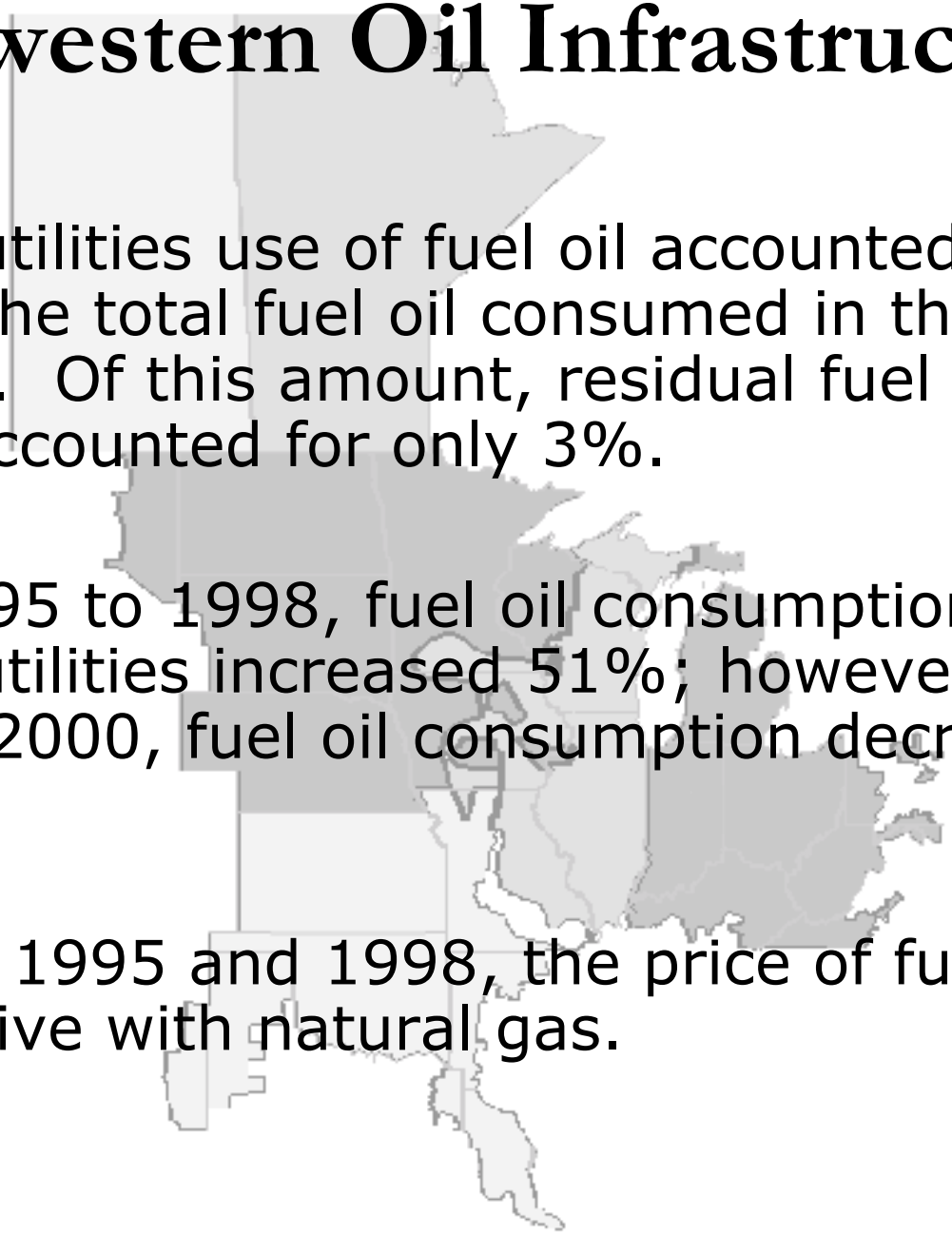
- Five major projects were certificated, from 2001 to the present time, adding 1,914 MMcf/d of new capacity.
- Three major projects are pending before the Commission with a projected capacity of 940 MMcf/d.
- Six major projects are on the horizon with the potential capacity of 5,609 MMcf/d of transmission and 480 MMcf/d of storage deliverability.

Natural Gas Prices in the Midwest



* **Source: RDI, Gas Daily, Data through April 24, 2002**

Midwestern Oil Infrastructure



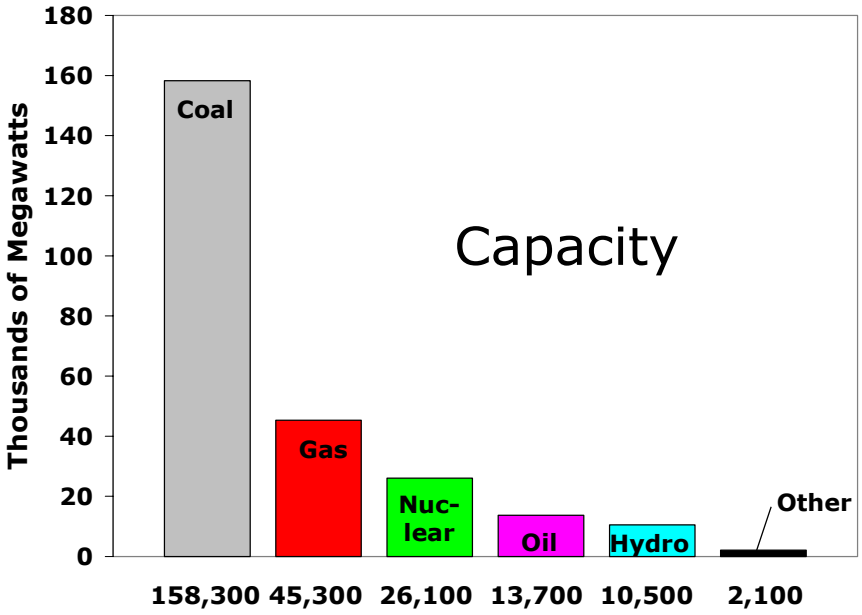
- Electric utilities use of fuel oil accounted for only 10% of the total fuel oil consumed in the Midwest for 2000. Of this amount, residual fuel oil (No. 5 and 6) accounted for only 3%.

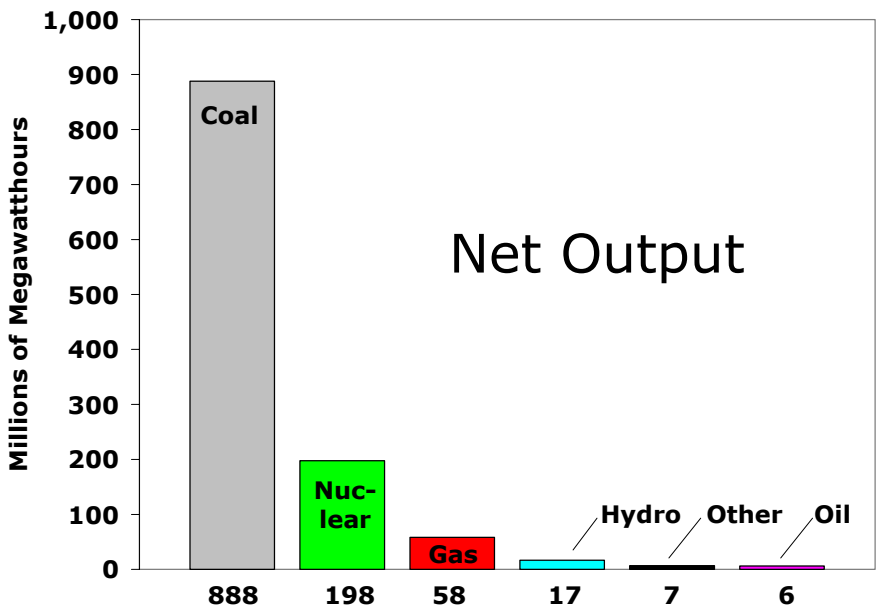
- From 1995 to 1998, fuel oil consumption by electric utilities increased 51%; however, from 1998 to 2000, fuel oil consumption decreased by 29%.

- Between 1995 and 1998, the price of fuel oil was competitive with natural gas.

KEY FACTS:

- Midwest U.S. capacity is 255,000 MW, larger than any other US region
- Midwest U.S. generation is 1,173 million MWh, higher than any other US region
- Midwest U.S. generation is 76.5% coal-fired, 17% nuclear, and 5% gas-fired, and 1.5% other
- 91% of new plant through 2004 is gas-fired

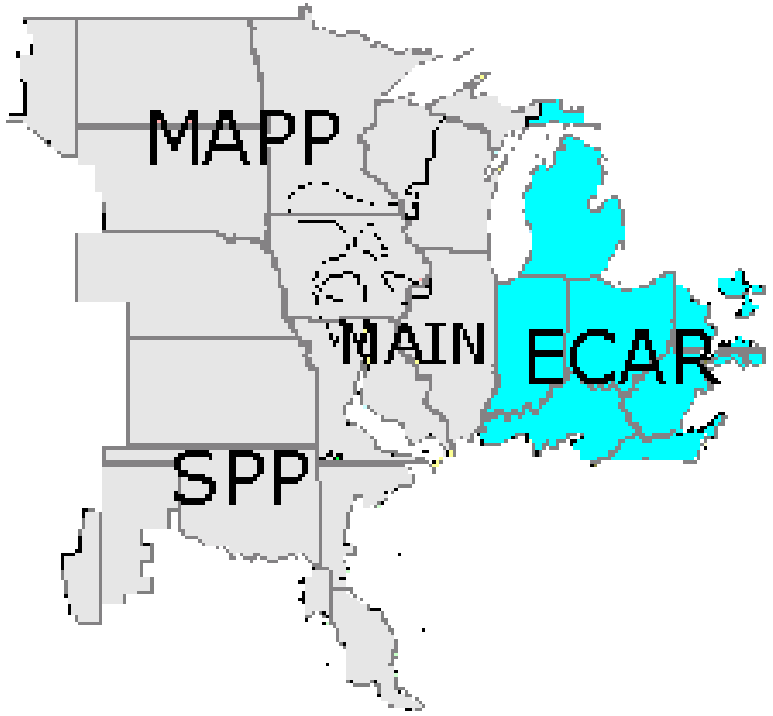




ECAR leads the pack in Midwestern Capacity

- Native industrial needs (e.g., auto making)
- Overbuilding pursuant to 1998 price spikes
- Ease of siting
- Abundance of fuel (coal) in the region

ECAR exports its excess generation eastward into PJM and southward into TVA

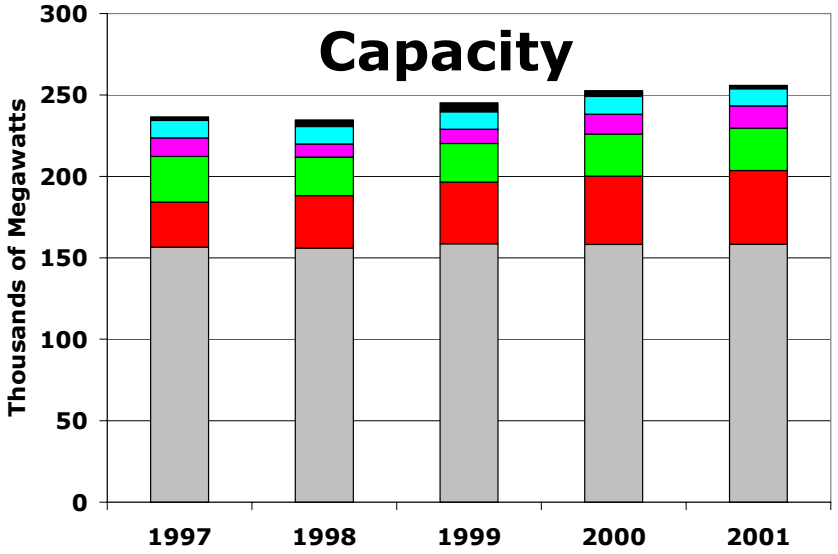


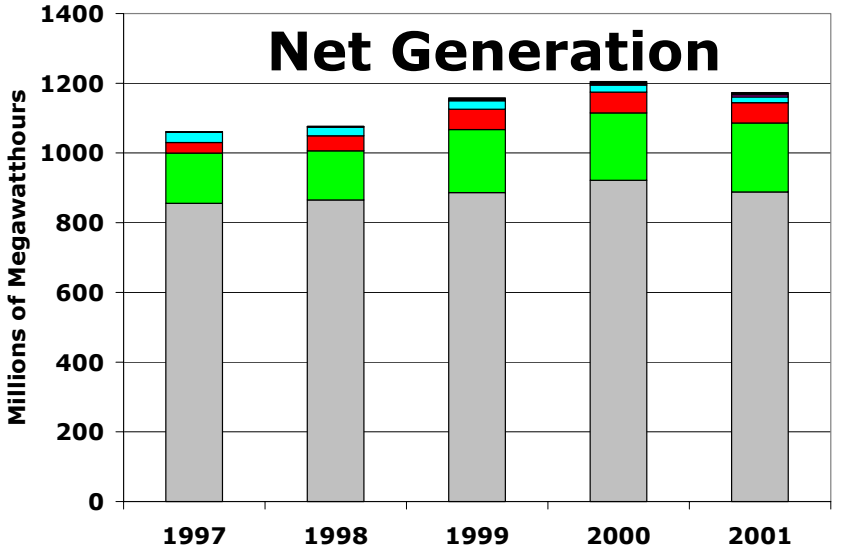
Source: RDI POWERdat, data set: June 2002, RDI Modeled Production Costs- Ownership Based and Utility / Non Utility Unit Ownership.

In the Midwest U.S., electric capacity increased 8.2% and electricity output increased 10.6% over the 5-year period ending in 2001. Gas constituted 17.7% of capacity, but only 5% of output; conversely, nuclear constituted 10% of capacity, but 16.9% of output.

OTHER
HYDRO
OIL
NUCLEAR
GAS
COAL

Demonstrated Capacity in Thousands of Megawatts							
Year	Coal	Gas	Nuclear	Hydro	Oil	Other	Total
1997	156	28	28	11	11	2	237
1998	156	32	24	8	11	4	235
1999	159	38	24	9	11	5	245
2000	158	42	26	12	11	4	253
2001	158	45	26	14	11	2	256
Net Generation in Millions of Megawatthours							
Year	Coal	Gas	Nuclear	Hydro	Oil	Other	Total
1997	856	30	144	29	2	1	1,061
1998	866	43	141	25	2	1	1,076
1999	886	58	181	24	3	5	1,158
2000	922	59	194	20	4	6	1,205
2001	888	58	198	17	6	7	1,173





Despite recent cancellations and tabled projects, the Midwest U.S. plans to increase its capacity by 17%.

New Capacity

*Through the year **2004** plus*

Existing Capacity

at 12/31/2001

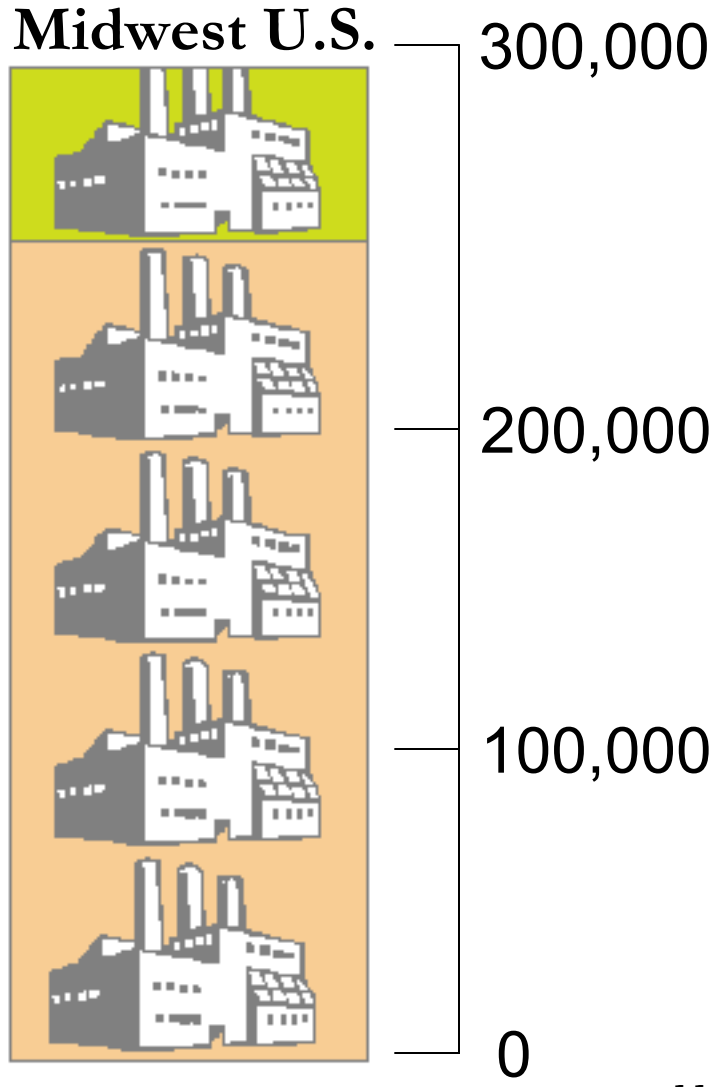
*An additional 22,713 MW have been canceled or tabled since 1/1/2002

43,600 MW*

New Capacity
90.7% Natural Gas
04.5% Wind
02.8% Comp. Air
02.1% Other

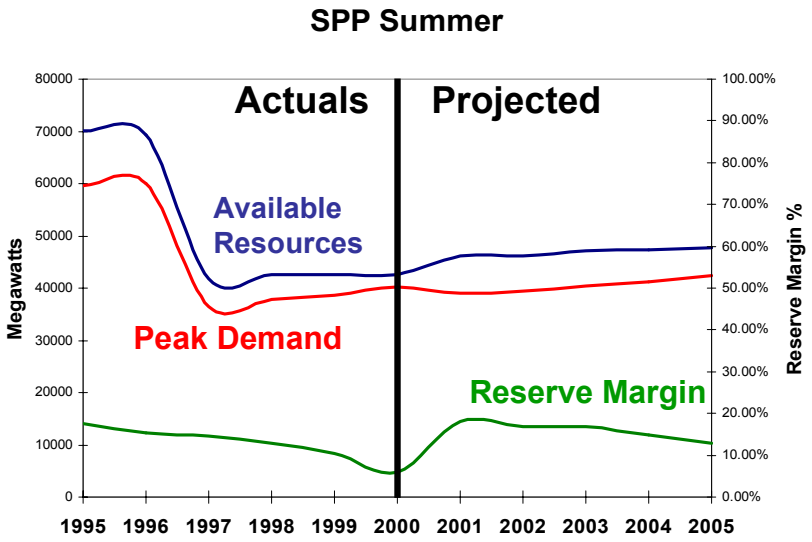
255,000 MW
at 12/31/2001

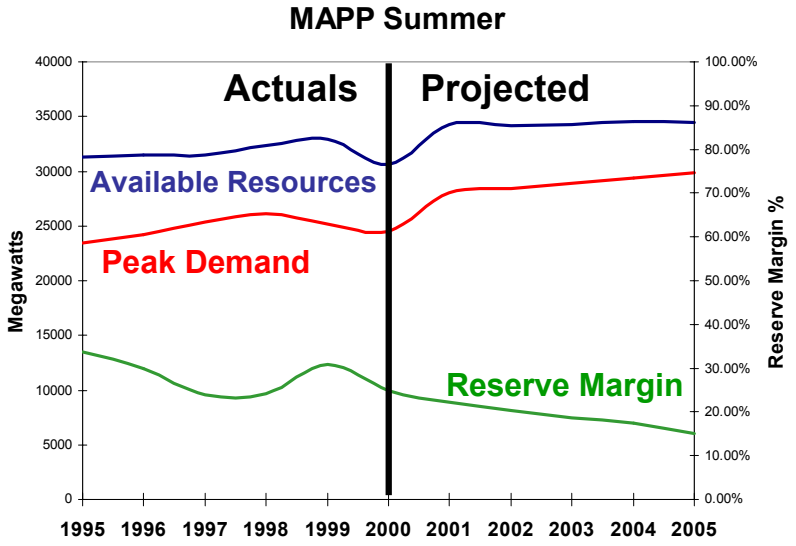
298,600 MW
Up 17%

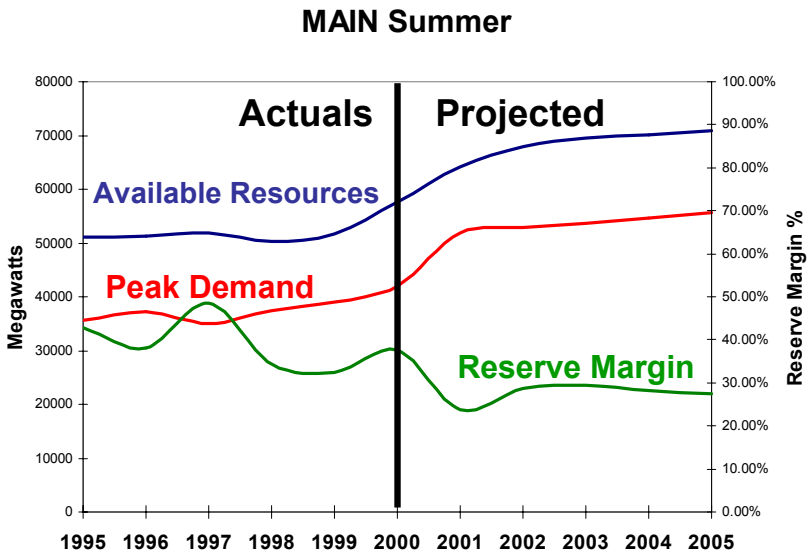


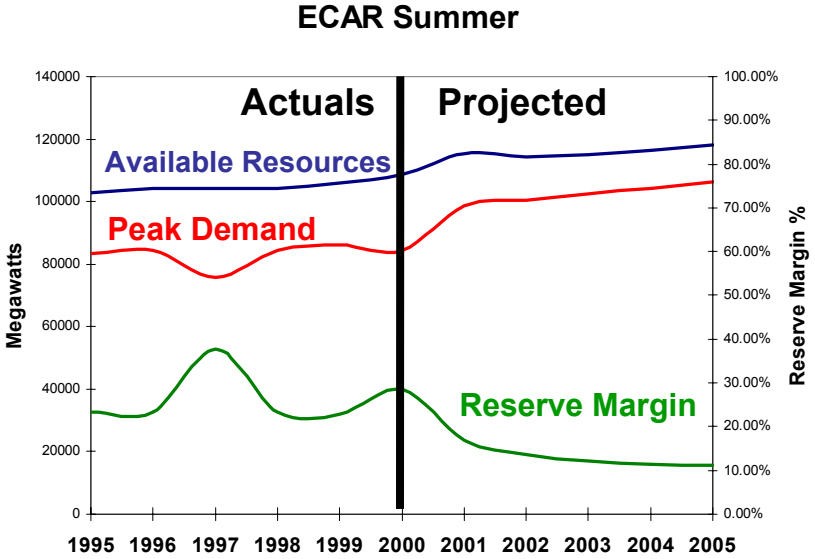
Source: RDI NEWGen, August 2002.

Healthy Reserve Margins in All Four Midwestern NERC Regions





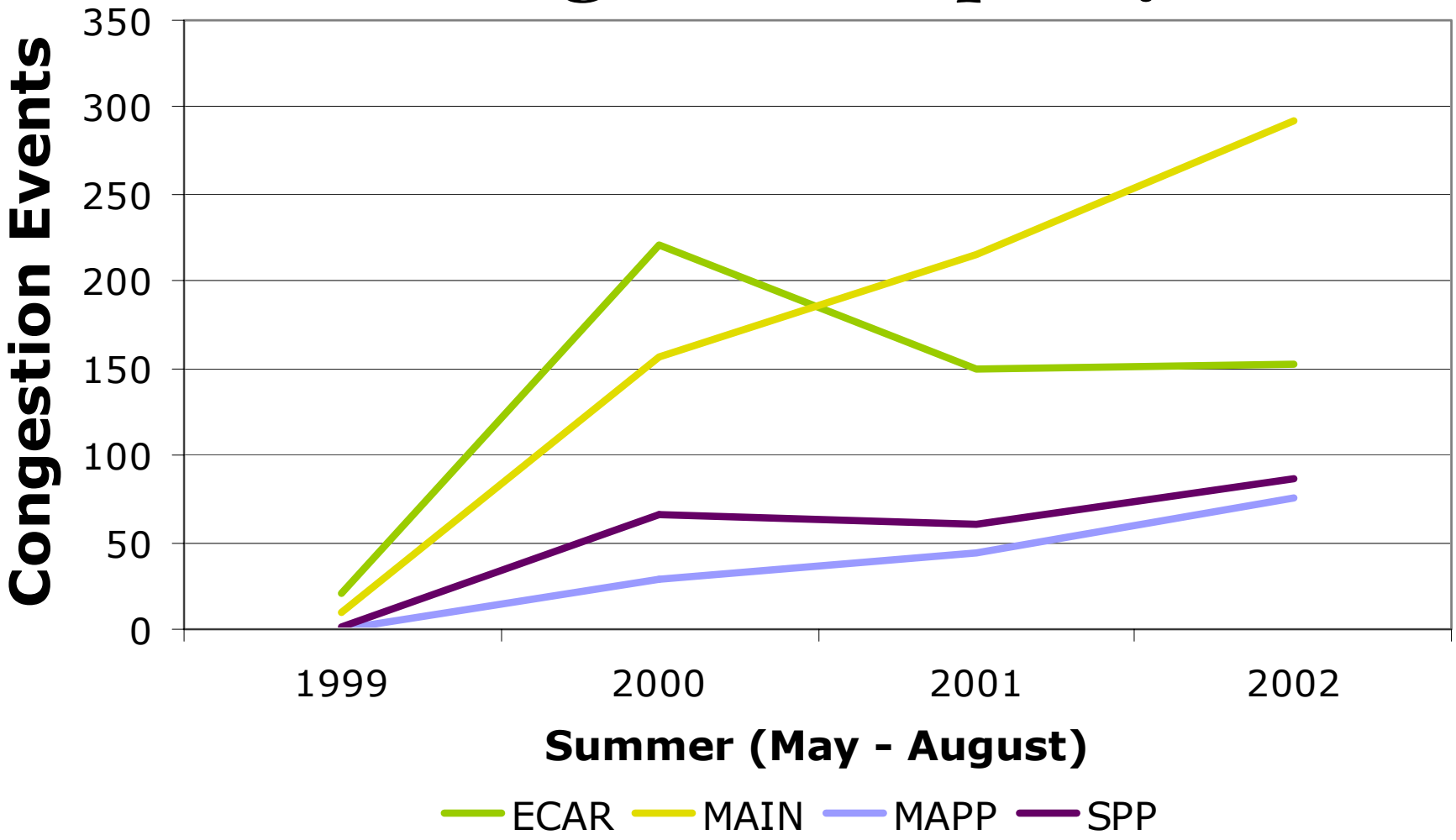




Coal in the Midwest

- In 2000, 76% of the Midwest electric generation was coal-fired.
- 92% of all coal consumption in the Midwest between 1991 and 2000 was by electric utilities.
- West Virginia is the largest producer of coal in the Midwest.
- The Midwest has ample coal supplies, but imports 41% of coal used for electric generation from Wyoming, because it is cheaper and cleaner-burning.

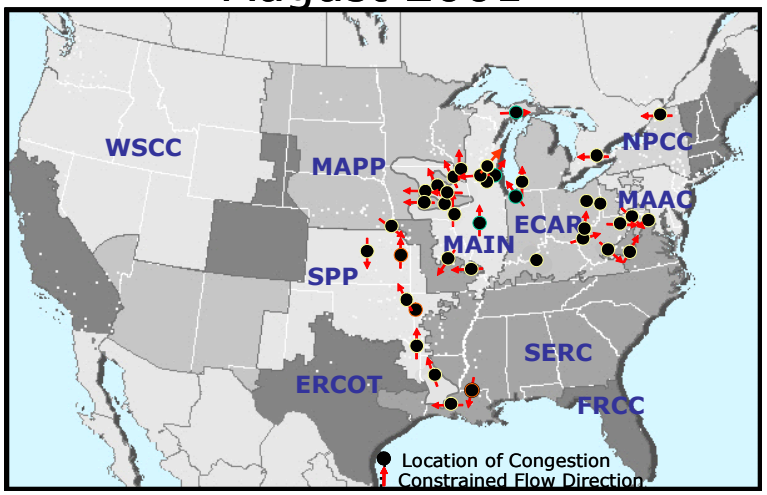
Congestion in Midwest has been increasing over the past year.



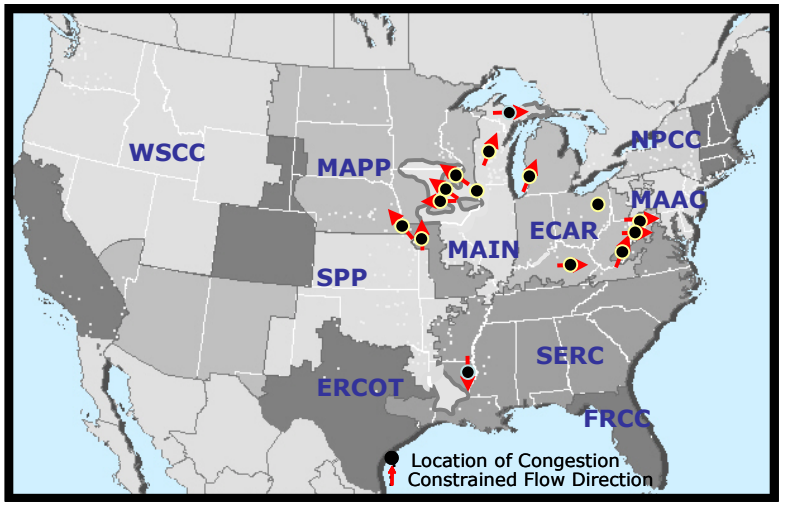
Source: NERC Central Repository for Security Events (TLR Procedures 2C and Higher)

Congestion Location & Impacts Can Vary With Season and Time of Day.

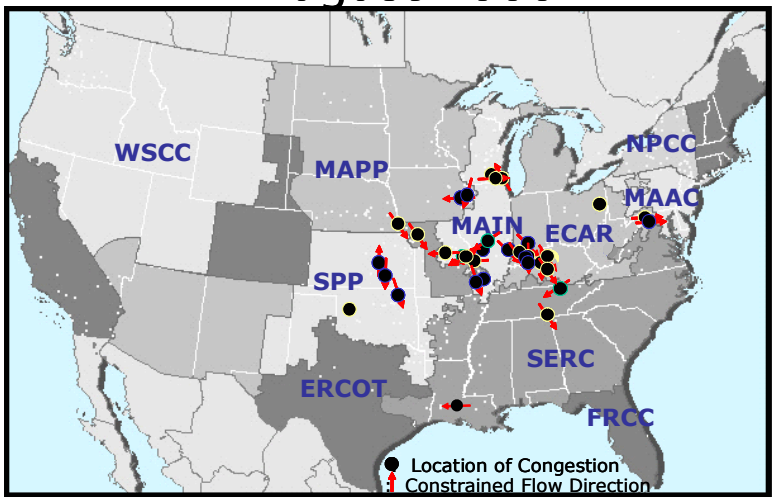
August 2001



December 2001



August 2000



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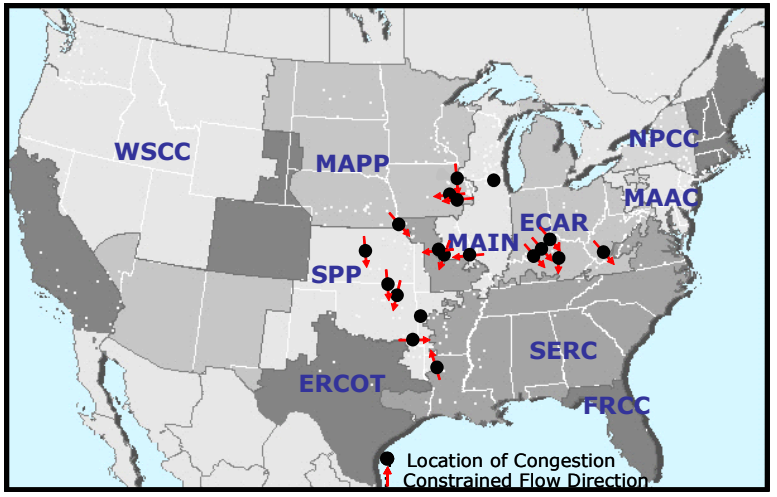
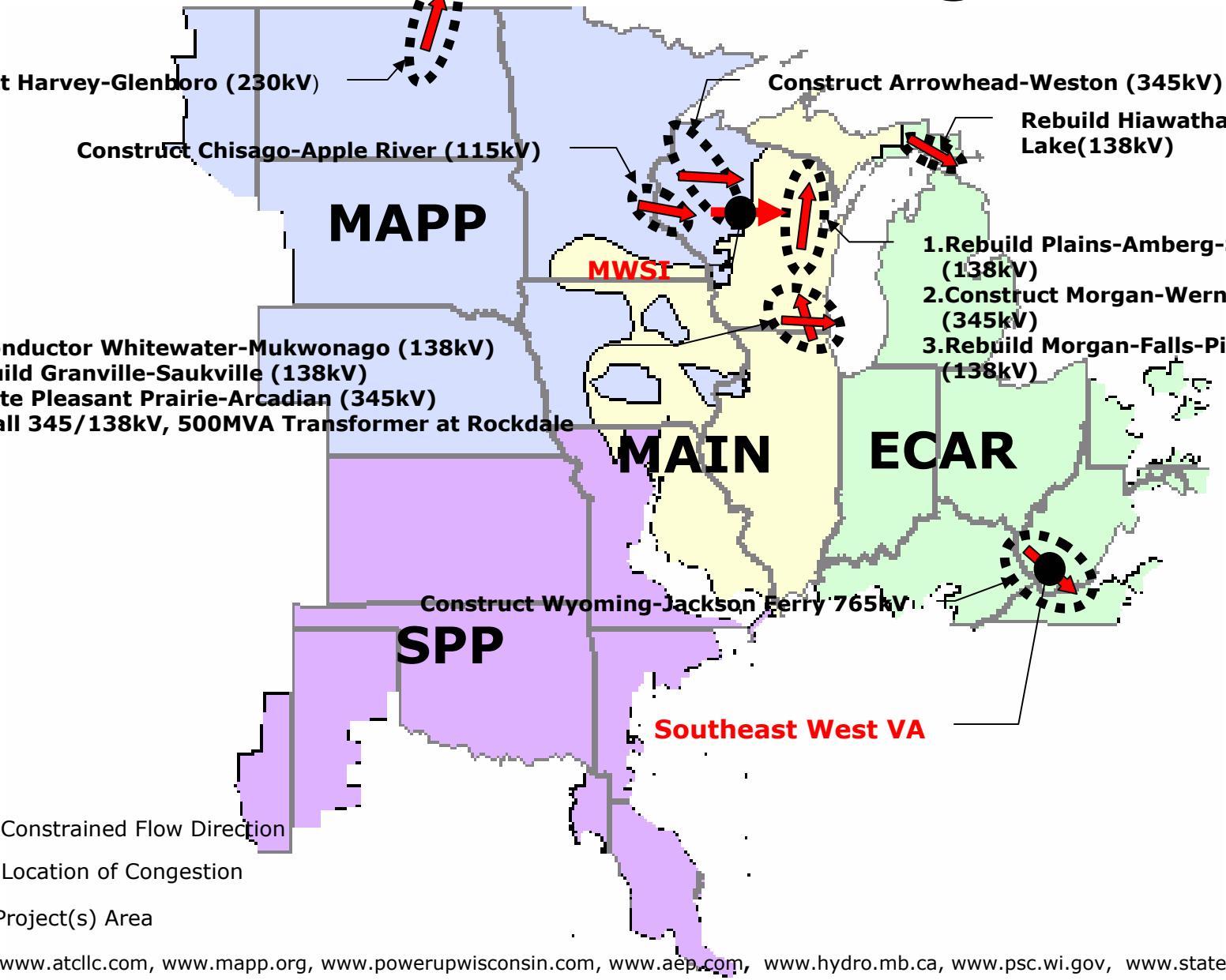


Source: NERC Central Repository for Security Events (TLR Procedures 2C and Higher) and FriedWire, Inc.

Projects to Alleviate Congestion



Source: www.atcllc.com, www.mapp.org, www.powerupwisconsin.com, www.aep.com, www.hydro.mb.ca, www.psc.wi.gov, www.state.mn.us

Summary

- Adequate pipeline and storage capacity exists to meet market needs.
- Adequate electric generation capacity exists to meet demand.
- Abundance of coal and nuclear generation tends to stabilize prices in the region.
- Price signals are needed to provide incentives for transmission expansion to relieve congestion. In 2004, price signals will appear as MISO implements LMP (Locational Marginal Pricing).

Team Members

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The End